

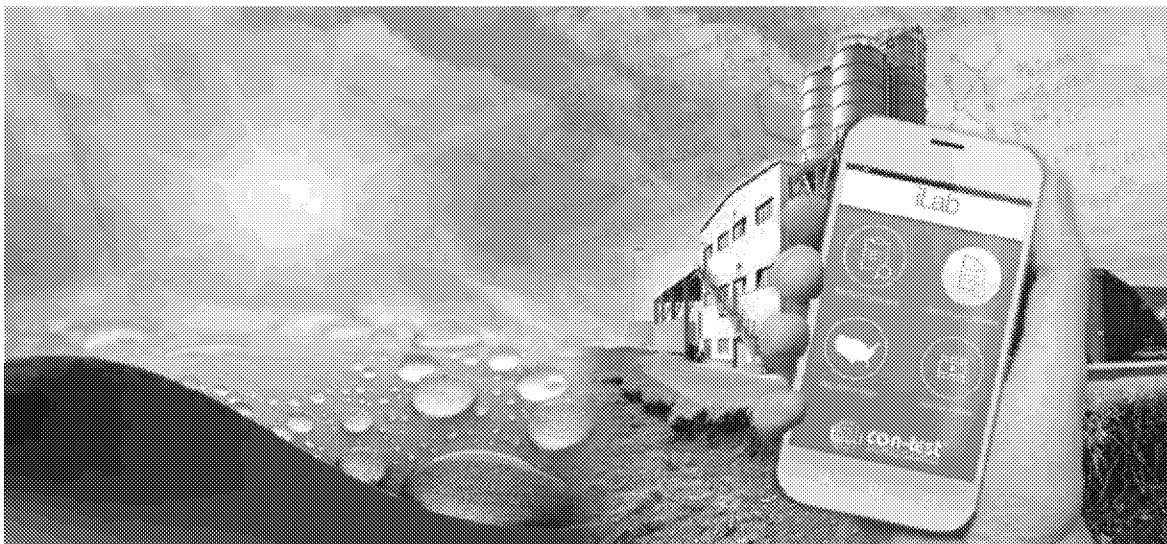
## *Con-Test Analytical Laboratory Statement of Qualifications*

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## TABLE OF CONTENTS



.....	1
<b>1.0 INTRODUCTION .....</b>	<b>4</b>
1.1 BRIEF COMPANY HISTORY .....	4
1.2 CAPABILITIES .....	4
1.3 LABORATORY PERSONNEL .....	5
1.4 CONFIDENTIALITY .....	5
<b>2.0 CERTIFICATIONS, ACCREDITATION, &amp; REGULATORY AGENCIES.....</b>	<b>6</b>
2.1 CERTIFICATIONS AND LICENSES .....	6
2.1.1 Professional.....	6
2.1.2 State .....	6
2.2 PARTICIPATION IN PROFICIENCY SAMPLE PROGRAMS .....	7
2.3 USE OF EXTERNAL LABORATORIES .....	7
<b>3.0 FACILITIES AND EQUIPMENT.....</b>	<b>7</b>
3.1 FACILITIES.....	7
3.1.1 Location of Facility .....	7
3.1.2 Sample Receiving (Log-In Department) .....	7
3.1.3 Metals Department .....	8
3.1.4 Organics Department .....	8
3.1.5 Extractions Department.....	8
3.1.6 Wet (General) Chemistry Department.....	8
3.1.7 Quality Assurance and Control .....	8
3.1.8 Project Manager Program & Customer Care .....	9
3.2 EQUIPMENT .....	9
<b>4.0 CAPABILITIES AND METHODOLOGIES .....</b>	<b>11</b>
4.1 INORGANICS LABORATORY CAPABILITIES .....	11
4.1.1 Inductively Coupled Plasma Atomic Emission Spectrometer (ICP-AES).....	11
4.1.3 Mercury Analyzer .....	11
4.1.4 General Chemistry.....	11
4.2 INORGANIC LABORATORY METHODOLOGIES .....	12
4.2.1 Standard Metals Packages .....	12

4.2.2	<i>Metals</i> .....	12
4.2.3	<i>General Chemistry</i> .....	13
4.2.4	<i>Industrial Hygiene Parameters - Inorganics</i> .....	15
4.3	ORGANIC LABORATORY CAPABILITIES .....	15
4.4	ORGANIC LABORATORY METHODOLOGIES .....	16
5.0	<b>DATA MANAGEMENT, WEBSITE &amp; ELECTRONIC DATA DELIVERABLES</b> .....	16
6.0	<b>QUALITY CONTROL AND REPORTING</b> .....	17
6.1	SCOPE OF PROGRAM.....	17
6.1.1	<i>Quality Control</i> .....	17
6.1.2	<i>Quality Assessment</i> .....	17
6.1.3	<i>Major Elements of the Quality Assurance Program</i> .....	17
6.2	SAMPLE PREPARATION QA/QC.....	18
6.3	SAMPLE ANALYSIS QA/QC.....	19
6.4	QUALITY CONTROL REPORTS.....	20
6.5	PROFICIENCY TESTING .....	20
7.0	<b>SAMPLE RECEIPT AND TURNAROUND POLICY</b> .....	20
7.1	TURNAROUND TIMES .....	20
7.2	COURIER SERVICE .....	21
8.0	<b>WASTE HANDLING PROCEDURES</b> .....	21
9.0	<b>SAFETY POLICY</b> .....	21
9.1	CHEMICAL HYGIENE PLAN.....	21
9.2	SAFETY COMMITTEE .....	22
10.0	<b>PROFESSIONAL AFFILIATIONS</b> .....	23
11.0	<b>REPRESENTATIVE CLIENTS</b> .....	23
	<b>ATTACHMENT A – RESUMES OF KEY PERSONNEL</b> .....	24
	<i>THOMAS E. VERATTI</i> .....	25
	<i>DAREN J. DAMBORAGIAN</i> .....	32
	<b>ATTACHMENT B – LABORATORY CERTIFICATIONS/ACCREDITATIONS</b> .....	34
	<b>ATTACHMENT C - CERTIFICATE OF LIABILITY</b>	
	<b>INSURANCE</b> .....	35

## **1.0 INTRODUCTION**

### **1.1 *Brief Company History***

Established in 1984, Con-Test, Inc. was founded providing environmental consulting and testing services to a variety of clients throughout the Northeast. In 2014 Con-Test celebrated its thirtieth year of providing a broad range of “Quality” Environmental Services. Initially, Con-Test’s laboratory testing operations was limited to Industrial Hygiene analyses mainly in support of in-house consulting services. Con-Test’s analytical laboratory rapidly expanded its capabilities throughout the years to include numerous techniques in general (wet) chemistry, metals, and organics.

In 1996, Con-Test Analytical Laboratory, became a privately owned, independent laboratory, providing environmental and industrial hygiene analytical services with AIHA accreditation and current NELAC accreditation. Con-Test is the only independent laboratory in all of New England with both prestigious AIHA-LAP, LLC and NELAC (ISO 17025) Certifications! Con-Test Analytical Laboratory is also individually certified in many states by a diverse group of recognized organizations and consistently demonstrates proficiency in numerous analyses and matrices under established programs.

### **1.2 *Capabilities***

The laboratory has the capability to perform environmental analytical testing for nearly all aqueous, air, soil or solid matrices. The Laboratory currently serves a diverse range of clients in an even broader range of analytical services. Analyses are performed to satisfy the following regulatory requirements and purposes:

- State Certifications :MA, CT, NY, NC, NH, RI, VT, NJ & FL(air only) , ME, VA
- AIHA-LAP, LLC Industrial Hygiene / Indoor Air Quality
- MA MCP/CAM Protocol, CT RCP Protocol
- National Pollutant Discharge Elimination System (NPDES)
- Industrial Pretreatment Program (IPP)
- Resource Conservation and Recovery Act (RCRA)
- EPA Requirements
- OSHA Compliance Requirements
- Code of Federal Regulations (CFR) Requirements
- Massachusetts Department of Environmental Protection (DEP)
- Safe Drinking Water Act (SDWA)
- Clean Water Act
- Hazardous Waste Characterization
- Massachusetts Water Resources Authority (MWRA)
- Water Compliance
- Groundwater Monitoring Programs
- Microbiology
- Well Water Testing
- MGP
- Perimeter Monitoring
- Soil Vapor

- PFC's – PFOA and PFOS testing
- Ozone Precursors
- TSCA
- TO Compendium Methods (TO-14A, TO-15, TO-17, TO-4A, TO-10A, TO-13A, TO-11A)
- Massachusetts Department of Environmental Protection Air-Phase Petroleum Hydrocarbons (APH) Method

Con-Test Analytical Laboratory is an established laboratory which realizes the need for remaining on the cutting edge of environmental technology. Automation of systems to the greatest extent possible is a primary objective of the laboratory. Current applications and systems are continually being expanded and updated whenever possible to achieve unrivaled quality and information turnaround. Con-Test believes that the use of state of the art instrumentation, including data management systems is imperative in maintaining needed efficiency and effectiveness of services. The laboratory is equipped with the latest instrumentation including Gas Chromatographs (GC), GC Mass Spectrometers (GC/MS), LC/MS/MS, Lachat Auto Ion Analyzer, Inductively Coupled Plasma-Atomic Emission Spectrometers (ICP-AES), ICP-Mass Spectrometer, (ICP-MS) Cold Vapor Mercury Analyzer, High Performance Liquid Chromatography, Ion Chromatography (IC), and a Laboratory Information Management System (LIMS).

The Laboratory is committed to providing analytical services of the highest quality achievable, while offering a high level of client commitment, balancing response and prompt turnaround with quality and reliable analyses. The laboratory strives to maintain, and ultimately exceed, established quality standards when providing objective and cost effective services in today's competitive environmental marketplace. The laboratory's Quality Assurance program ensures accuracy of data from testing methodologies to provide a high level of confidence in test results. The laboratory can also provide important support for Industrial Hygiene and Environmental Companies needing technical services, applications, and methodologies.

### **1.3      *Laboratory Personnel***

The Laboratory is staffed with highly experienced core management individuals and technically competent and experienced laboratory personnel. Our management team has collectively over a hundred years of experience in environmental laboratory and have a strong client services orientation. See resumes in *Attachment "A"* of this document.

### **1.4      *Confidentiality***

All work performed on behalf of our clients is treated with the strictest confidentiality. Analytical results are never released to parties other than the client except at the client's written request.

## **2.0 CERTIFICATIONS, ACCREDITATION, & REGULATORY AGENCIES**

Con-Test Laboratory holds and maintains certification and accreditation from a number of different state, federal, local, and regulatory agencies encompassing all regulated services. Copies of all Con-Test's current laboratory certifications are available on request. They are also available on our website at <http://www.contestlabs.com>.

### **2.1 Certifications and Licenses**

#### **2.1.1 Professional**

##### **TNI-The NELAC Institute**

Primary through NY: NY Lab Id No: 10899

##### ➤ **AIHA-LAP LLC (ISO 17025)**

Accredited Laboratory #100033

- Industrial Hygiene – Metals, Organic Solvents
- Environmental Lead – Paint, Soil, Dust, Air
- Includes parameters of TO-15, TO-14A, TO-13A, TO-17, TO-11A

##### ➤ **U.S. Environmental Protection Agency (EPA)**

- National Lead Laboratory Accreditation Program
- Environmental Lead Proficiency Analytical Testing Program

#### **2.1.2 State**

##### ➤ **Commonwealth of Massachusetts – M-MA100**

- Department of Environmental Protection – Chemical Analysis of Potable, Non-Potable and Microbiological Analysis of Water

##### ➤ **State of Connecticut – PH-0567**

- Department of Public Health Approved Laboratory – Potable Water, Wastewater, Sewage and Soil; Extractable Total Petroleum Hydrocarbons (ETPH)

##### ➤ **State of New York - #10899**

- Department of Health, ELAP Accreditation – Solid & Hazardous Waste; Solid & Air and Emissions; Potable/Non-Potable Water

##### ➤ **State of New Hampshire – NELAC Secondary #2516, NELAC Primary #2557 - EPH/VPH/EPA 537**

- Department of Environmental Services

##### ➤ **State of Rhode Island - #LAO00112**

- Department of Health – Analytical Laboratory License

##### ➤ **State of Vermont**

- Department of Health
- Lead Certification for Analysis of Soil, Dust & Paint (#LL720741)

##### ➤ **State of Florida- # E871027**

- Department of Health-Air & Emissions

##### ➤ **State of New Jersey (Air)**

- 1° NELAP (Lab # MA007)
- 2° NELAP (Air)

##### ➤ **State of North Carolina, (certificate # 652)**

##### ➤ **State of Virginia- #460217**

##### ➤ **State of Maine- #MA00100**

## **2.2      *Participation in Proficiency Sample Programs***

In the maintenance of certification and accreditation in the applicable areas, Con-Test participates in a wide range of environmental laboratory proficiency programs in which Con-Test's expertise is demonstrated through the analysis of proficiency samples.

Those proficiencies, which are regularly participated in, include the following:

- New York DOH Proficiency Studies
- DMR QA Studies
- AIHA LAP LLC- Proficiency Analytical Testing Program (IHPAT)
- AIHA LAP LLC-Environmental Lead Proficiency Analytical Testing (ELPAT)
- Individual Studies Through ERA

## **2.3      *Use of External Laboratories***

When samples are received for an analysis which is not performed by the laboratory, a qualified outside laboratory is found to perform the analysis. Only outside laboratories that have demonstrated proficiency in the analysis requested are selected. Laboratories are deemed proficient if they are either:

- 1.) Accredited by AIHA
- 2.) Certified by a state or recognized "Quality" agency
- 3.) Able to demonstrate acceptable accuracy and precision in the analysis of spiked samples generated by Con-Test Analytical Laboratory.

Only Laboratories following approved methods will be used for outside work after approval has been obtained from our client.

# **3.0      FACILITIES AND EQUIPMENT**

## **3.1      *Facilities***

### **3.1.1      Location of Facility**

Con-Test Analytical Laboratory's full-service facility is located at 39 Spruce Street, East Longmeadow, Massachusetts. The laboratory is easily accessible from both Interstate 91 and the Massachusetts Turnpike I-90.

### **3.1.2      Sample Receiving (Log-In Department)**

The functions of this department include receiving and logging-in samples and the required analyses into the Laboratory Information Management System (LIMS). All samples are labeled with a bar coded lab number assigned by the LIMS. This login process allows for more efficient tracking of samples, turnaround times and completion of data.

### **3.1.3 Metals Department**

This laboratory is dedicated to metals analysis of individual metals, priority pollutant 13 metals, RCRA 8 metals, and TCLP metals. All test methods are in full compliance with EPA and/or AIHA-LAP, LLC protocols.

### **3.1.4 Organics Department**

This department is dedicated to organic analysis for both environmental and industrial hygiene parameters. All organic compounds are analyzed by gas chromatography (GC), high performance liquid chromatography (HPLC), gas chromatography/mass spectroscopy (GC/MS), or liquid chromatography mass spectroscopy/mass spectroscopy (LC/MS/MS)

### **3.1.5 Extractions Department**

This department supports the organics department by preparing all extractable organics such as semi-volatiles, EPH, pesticides, PCB's, herbicides, PAH's and fuel characterizations, so that they may be analyzed on the appropriate instrument.

### **3.1.6 Wet (General) Chemistry Department**

This department performs a broad range of general chemistry tests, from bacteria and pH to cyanide, nitrate and hexavalent chromium.

### **3.1.7 Quality Assurance and Control**

The purpose of Con-Test's Quality Assurance Plan is to ensure the production of quality, objective, and cost effective services to our clients. The laboratory operation offers a high level of client commitment, balancing response and prompt turnaround with quality and reliable analyses.

#### **3.1.7.1 Quality Assurance Goals**

- A. Establish and maintain the quality management and assurance systems in the production of consistently reliable and accurate "quality data" of known precision and bias.
- B. Monitor analytical methods to insure use of appropriate, EPA, State, or recognized agency endorsed or approved methodology insuring that client's needs for precision, accuracy, and sensitivity are met or ultimately exceeded.
- C. Ensure the use of sound laboratory techniques and practices, by competent, trained individuals.
- D. Establish and maintain Standard Operation Procedures for all processes producing uniformity and definition.
- E. Maintain systems for early identification of problems and defined procedure for quick resolution.



- F. Promote a positive attitude toward improvement of total quality.

### 3.1.8 Project Manager Program & Customer Care

Con-Test is committed to offering the highest possible level of client service. As part of this commitment we implemented a Project Manager Program. This program brings highly experienced, trained professionals from the laboratory setting to work directly with our clients. Each client is assigned a Project Manager as their primary laboratory contact, offering them the best resources available for their technical questions and needs. Our Client Services Manager directs and oversees the Project Manager Program and has over fifteen years of environmental laboratory experience.

## 3.2 Equipment

Con-Test utilizes a full array of cutting edge technology for all of our analyses. Automation of systems to the greatest extent possible is a primary objective of the laboratory. Current applications and systems are continually being expanded and updated whenever possible to achieve unrivaled quality and information turnaround. Con-Test believes that the use of state-of-the-art equipment and instrumentation, including data management systems is imperative in maintaining needed efficiency and effectiveness of services. Furthermore, all major analytical areas have numerous redundancy in instrumentation. The following partial listing of the instrumentation available to support laboratory analyses indicates the breadth and depth of our capabilities.

### CON-TEST ANALYTICAL LABORATORY EQUIPMENT LIST

The following is a list of commonly utilized major analytical equipment for the entire laboratory. *Please note: This is not a complete listing.*

<u>Equipment</u>	<u>Detail</u>
Gas Chromatographs	(16) -Agilent – 5890/6890/7890  (3) PID/FID - Purge and trap (9) ECD/ECD - Dual direct injectors (3) FID/FID - Dual direct injectors (1) FPD –Direct inject
GC/MS	(14) -Agilent –MSD 5970/72/73/75 (6) Purge and trap (with Archon Autosampler)  (5) → (1) 5970 (2) 5973 Direct inject (4) Air Entech Autosampler ( 2-5970, 1-5972, 1-5973, 1-5975), 7016 (6), 7032 (2-minican)
LC/MS/MS High Performance Liquid Chromatography	(1) Agilent 6460 Triple Quad LC/MS (1) Dionex Ultimate 300

Ion Chromatograph	(1)	Dionex 2000
Concentration Workstations	(11)	(2) Zymark Turbovap II Workstations S-Evap (3) N-Evap III (6) Buchi Syncore
TCLP Extractors	(3)	50 station capacity
Soxhlet Extraction Set-ups	(200)	
Microwave Extractor/Digestor	(2)	MARS Xpress
Automated Solvent Extractor	(2)	(1) Dionex ASE-200 (1) Dionex ASE-300
Mercury Analyzer System	(1)	- Perkin Elmer FIMS 100 CVAA Mercury Analysis
ICP	(2)	-Perkin Elmer – Optima 4300 Dual View Simultaneous
ICP-MS	(2)	-Perkin Elmer ICP-MS ELAN 9000 -Agilent 7900 ICP-MS
Digestion Block	(2)	-SPC Science Digi-Prep MS
Automated Analyze	(1)	-Lachat Quick Chem 8000 series FIA <sup>+</sup>
Spectrophotometer	(3)	-ThermoSpectronic Genesys 20
Kjeldahl Apparatus	(1)	-Tecator, Kjelttec System Unit 1001
Flashpoint Apparatus	(1) (1)	-PetroTest PM4, closed cup - Koehler K162XX, closed cup
pH / Ion meter	(1) (1)	- Orion EA 920 - ThermoElectron Orion 420A+
Conductivity Meter	(1)	- YSI Model 35
Dissolved Oxygen Meter	(1)	- YSI Model 58
TOC Analyzer	(1)	- Aurora 1030 Oxidation Analyzer
Turbidimeter	(1)	- VWR Model 46210-200
Summa/Silco Canisters 400ml		over 1000 -Various 6L, 3L, 1L,
Flow Regulators		over 500 - Various
Summa Canister Cleaner		2 - Various

## **4.0 CAPABILITIES AND METHODOLOGIES**

### **4.1 *Inorganics Laboratory Capabilities***

Environmental analyses are performed according to EPA-approved or DEP-accepted methodologies. Methodologies approved by the National Institute for Occupational Safety and Health (NIOSH) are employed for standard types of industrial hygiene analysis. Dust, air, paint and soil samples collected as part of abatement project monitoring are analyzed according to HUD guidelines. All methods utilized in the laboratory are subject to rigorous quality control protocols. Following are the major analytical techniques utilized to analyze inorganic samples.

#### **4.1.1 Inductively Coupled Plasma Atomic Emission Spectrometer (ICP-AES)**

Inductively Coupled Argon Plasma is used for metals analysis. The automated Perkin-Elmer OPTIMA 4300 DV which simultaneously uses both axial and radial viewing to obtain lower detection limits without sacrificing dynamic range. This system is completely computer-controlled and equipped with WinLab software that enables the autosampler to automatically perform quality control analysis required by each protocol, as well as to take corrective action if necessary.

#### **4.1.2 Inductively Couple Plasma Mass Spectrometer (ICP-MS)**

The Perkin Elmer Elan 9000 and Agilent ICP-MS's are used for metals analysis requiring low detection limits in the parts per billion range. The use of a mass spectrometer reduces interferences by determining each analyte based on its mass to charge ratio. With use of a computer controlled software system and an auto-sampler, sample analysis can be performed rapidly and accurately.

#### **4.1.3 Mercury Analyzer**

The Perkin Elmer FIMS 100 CVAA mercury analyzer is capable of analyzing many materials using cold vapor, and can achieve detection limits of 0.040 ppb or less.

#### **4.1.4 General Chemistry**

A broad array of analyses are performed using a variety of EPA, NIOSH and Standard Methods methodologies. Instrumentation such as the Lachat Quick Chem AE Automated Ion Analyzer and Dionex 2000 ion chromatograph enable multiple analyses in an automated fashion allowing for enhanced efficiency in this department.

## **4.2 Inorganic Laboratory Methodologies**

### **4.2.1 Standard Metals Packages**

8 RCRA Metals / TCLP with 8 RCRA Metals	As, Se, Ag, Hg Ba, Cd, Cr, Pb
13 Priority Pollutants	Sb, As, Be, Cd, Cr, Cu, Pb, Hg, Ni, Se, Ag, Tl, Zn
15 Priority Pollutant Metals/ RCP metals	Sb, As, Be, Cd, Cr, Cu, Pb, Hg, Ni, Se, Ag, Tl, Zn, Ba, V
Primary Drinking Water Metals	Ag, As, Ba, Cd, Cr, Pb, Hg, Se
Secondary Drinking Water Metals	Cu, Fe, Mn, Na, Zn
ICP Scan	Al, Sb, As, Be, Cd, Cr, Co, Cu, Fe, Pb, Mn, Mo, Ni, Va, Zn, Ag, Ba, K, Na, Ca, Mg, B, Se
MCP Metals	Sb, As, Be, Cd, Cr, Cu, Pb, Hg, Ni, Se, Ag, Tl, Zn, Ba, V, Co

### **4.2.2 Metals**

For most soils and solid materials to be analyzed for metals, SW846 method 6010 is utilized. Method 6010: Inductively Coupled Plasma-Atomic Emission Spectroscopy can normally produce adequate sensitivity and therefore method detection limits for most applications. Lower detection limits are possible where required or specified using ICP-MS or alternate methods. Samples are first subjected to the appropriate preparation step.

**4.2.3 General Chemistry**
**ESTABLISHED METHODS**  
**Wet Chemistry Section**

<b>Analyte</b>	<b>Method/Classification</b>	<b>Matrix</b>
Alkalinity	SM 2320B Titrimetric	Drinking water/WW
Ammonia	SM 4500-NH <sub>3</sub> -C	DW/WW
BOD	SM 5210B	WW
Chloride	SM 4500CL B	DW/WW
COD (High Range)	EPA 410.4 Colorimetric	WW
COD(Low Range)	EPA 410.4 Colorimetric	WW
Color	SM 2120B	DW/WW
Conductivity	SM 2510B	DW/WW
Hexavalent Chromium	SM 3500CrB	DW/WW
Cyanide	SM 4500CNE	Wastewater only
Free Cyanide	SM 4500CNE	Drinking waters
Amenable Cyanide	SM 4500CNE	DW/WW
Fluoride	SM 4500F-C	Drinking waters
Oil and Grease (FOG)	EPA 1664B	WW
Flashpoint	SW-846/1010A Pensky-Martens Closed Cup	WW
Hardness	SM 2340C	WW
Nitrate	SM 4500 NO <sub>3</sub> F	DW/WW
Nitrite	SM 4500 NO <sub>2</sub> B	DW/WW
Total Nitrate + Nitrite	SM 4500 NO <sub>3</sub> F	DW/WW
Odor	SM 2150B	DW/WW
pH	SM 4500HB	DW/WW
Phenolics	EPA 420.1 Spectrophotometric, Distillation	WW
Phosphate-Ortho	SM 4500PE	DW/WW
Phosphorous-Total	SM 4500PE	DW/WW
Sulfate	ASTM D516-90.02	DW/WW
Sulfide	SM 4500 S-F	DW/WW
Surfactants	SM 5540C Colormetric, MBAS	DW/WW
TDS (Filter Residue)	SM 2540C	DW/WW
TS (Total Residue)	SM 2540B	DW/WW
TSS (Non Filter Res.)	SM 2540D	DW/WW
Settleable Residue	SM 2540 F	DW/WW
TKN (Kjeldahl – N)	SM 4500 NH <sub>3</sub> C	DW/WW
Turbidity	EPA 180.1 Nephelometric	DW/WW
Total Residual Chlorine	SM 4500 CLG	DW/WW

**Other Commonly Utilized Methodology  
Solid Materials, Misc.**

<b>Analyte</b>	<b>Methodology</b>	<b>Matrix</b>
% Solids	SM 2540G	Semisolids, Sludge
Reactive Cyanide	SW846 Chpt. 7.3.3.2	Solids
Reactive Sulfide	SW846 Chpt. 7.3.3.2	Solids
pH	SW846 9045	Soils
Dust: Total	NIOSH 0500	Air
Respirable	NIOSH 0600	Air

DW = Drinking Water

WW = Wastewater

SM = Standard Method for the Examination of Water and Wastewater

#### 4.2.4 Industrial Hygiene Parameters - Inorganics

Analyte	Methodology	Matrix
Dust (Total)	NIOSH 0500	Air
(Respirable)	NIOSH 0600	Air
Metals:		
Arsenic (AS)	Modified NIOSH 7303	Air
Beryllium (Be)	Modified NIOSH 7303	Air
Cadmium (Cd)	Modified NIOSH 7303	Air
Chromium (Cr)	Modified NIOSH 7303	Air
Copper (Cu)	Modified NIOSH 7303	Air
Lead (Pb)	Modified NIOSH 7303	Air
Nickel (Ni)	Modified NIOSH 7303	Air
Zinc (Zn)	Modified NIOSH 7303	Air
Metals by ICP	Modified NIOSH 7303	Air
Mercury	NIOSH 6009	Air

NOTE: Only the most commonly requested Air Analysis methods are listed. Other analytes and alternative methods are available. Please check with a Customer Service Representative for more details.

\*\*\*IT IS REQUIRED THAT A BLANK BE SUBMITTED FOR ALL WIPE AND AIR ANALYSES\*\*\*

#### 4.3 Organic Laboratory Capabilities

Con-Test currently has sixteen Agilent 5890/6890/7890 Gas Chromatographs (GC). Thirteen of the GC systems are set up with direct injection autosamplers. All thirteen of the systems are equipped with two detectors each, either dual flame ionization detectors (FID), electron capture detectors (ECD) or a combination. Two of the GC systems are set up for purge and trap volatile analysis. Both systems have concentrators, multi-position autosamplers and dual detector, photoionization detector (PID), and FID in series.

Con-Test also has fourteen GC/MS systems. All systems are Agilent 5970/72/73/75 GC's with Agilent Mass Spectrometer's. Five systems are set up with direct injection autosamplers. Five systems are set up with purge and trap systems, concentrators and a 51 position Archon autosampler. Four GC/MS are set up for air analysis, TO-14 and TO-15, TO-17, APH and thermal desorption. Con-test also has one Agilent LC/MS/MS system.

Services are provided to Industrial Hygiene and Environmental Consultants, industry and public agencies involved in the monitoring of VOC's, semi-volatiles, EPH/VPH, TPH, PCB's, Pesticides and herbicides in the workplace, ambient air, water and soil.

#### **4.4 Organic Laboratory Methodologies**

Petroleum Analysis: 8015, 8015GRO or DRO, 8100, ETPH (CT method), EPH/VPH (MA method)

Volatile Organics (GC/MS): 524, 8260, 624, SM6200

Pesticides: 608, 8081

PCB: 608, 8082, PCB Congeners by 8270M, EPA 680 PCB Homologs

Semi-Volatile Organics: 625/8270, PAH only, PAH only w/GC/MS SIM

TCLP/SPLP

Air Analysis: VOCs by EPA TO-14, TO-15, TO-17; PCBs/and or Pesticides by TO-4, TO-10; PAH by TO-13, Sulfur Analysis by Method 16, Fixed Gases by Method 3C, Particulate matter by PM10, PM2.5, TSP; APH (Air Phase Petroleum Hydrocarbons), Metals by NIOSH methods, Formaldehyde by TO-15M or TO-11, 4-PC, TVOC's by TO-15M

PFC Analysis: PFOS and PFOA by EPA 537 and ISO 25101

#### **5.0 DATA MANAGEMENT, WEBSITE & ELECTRONIC DATA DELIVERABLES**

In 2009 Con-Test completed the changeover to a new state-of-the art, user-friendly Laboratory Information Management System (LIMS) called Element. LIMS is the software that enables laboratory communication, sample management, data calculation, review and reporting throughout the laboratory operation. Our new LIMS offers clients many benefits including:

- More information available on reports and increased readability
- Improvements in case narrative summaries and data qualifiers
- Updated website access and project status
- Additional Electronic Data Deliverable formats (EDD's)

Con-Test's user-friendly, interactive website provides project support in any location. Every client receives an account which allows viewing of current and past reports and in-house project status'. The "details" of projects can be viewed including which parameters are complete or pending. This information comes directly from our LIMS system in real time.

Con-Test also has the capability to provide our clients with reports in several different formats including Excel, PDF, Equis, Envirodata, and GIS Key, as well as many custom Electronic Data Deliverables (EDD's). These EDD's allow our clients to receive data that comes directly from our LIMS in their preferred electronic format.



## **6.0 QUALITY CONTROL AND REPORTING**

### **6.1 *Scope of Program***

Quality Assurance/Quality Control in the Environmental/Industrial Hygiene Laboratory incorporates specific actions performed on a daily basis in order to verify that sample integrity and quality of analyses are maintained to designated standards. The fundamental principals of the QA/QC program are inherent in each separate operation performed in the laboratory (for example, login procedures, sample tracking, contamination control, etc.). In addition, laboratory personnel strictly adhere to those procedures specifically designed to assure that quality results are obtained during each sample analysis.

#### **6.1.1 Quality Control**

Quality control consists of specific procedures or measures adapted to specific operating conditions. These procedures, which apply to every phase of business done at Con-Test Analytical Laboratory, provide a quality structure upon which each procedure is constructed. The purpose is to insure quality of data and service to our clients.

#### **6.1.2 Quality Assessment**

Quality assessment involved the continuous evaluation of data and monitoring of analytical processes to insure that quality control procedures are performing correctly.

#### **6.1.3 Major Elements of the Quality Assurance Program**

- The use of appropriate methodologies by technically competent, well-trained personnel, using state of the art instrumentation and equipment.
- Adherence to well-defined standard operating procedures, with emphasis on sound laboratory techniques.
- Monitoring of analytical methods to insure that data user's needs for precision, accuracy, and sensitivity are met. Assessment of data by use of quality control samples including (but not limited to): blanks, independent laboratory control samples, duplicate samples, matrix spiked samples, and surrogate spiking for samples.
- Internal and external system and performance audits to monitor compliance with procedures and assess performance of analytical methods.

## **6.2 Sample Preparation QA/QC**

All samples submitted to the laboratory, whether for organic or inorganic analysis, must first be subjected to sample preparation before actual analysis may be performed. Specific procedures are performed to insure that samples do not become contaminated during this preparation process.

A Method Blank (MB) or a Reagent Blank is prepared with the samples to be analyzed. This blank, which is treated in every respect like the actual samples to be analyzed, must be below the instrument reporting limit at the time of analysis. If this is not the case, the analysis is “flagged” and/or must be re-performed, beginning with the preparation procedure. For AIHA-LAP, LLC air samples, a MB is analyzed at a frequency of one per ten samples (10 percent). For most EPA environmental samples, a MB is analyzed at a frequency of one per twenty samples (5) percent. However, regardless of the number of samples to be analyzed, a new blank(s) is analyzed daily, including a MB for each different matrix.

Specific procedures are also employed to insure the proper recovery of the designated analyte from the matrix that is being prepared. A Laboratory Control Spike (LCS) consists of distilled water or solid matrix spike with a known amount of the analyte to be analyzed. The LCS is subjected to the same preparation procedure as all other samples, at a frequency of ten percent for AIHA-LAP, LLC samples and five or ten percent, depending on specific method requirements for EPA or environmental samples. The LCS must fall within acceptable limits in order for the preparation procedure to be regarded as valid.

An additional procedure to insure proper recovery of an analyte or analytes in a sample is to prepare a Matrix Spike (MS). The MS is an additional sample aliquot which has been spiked with a known quantity of the analyte(s) to be tested, and is also subjected to the entire preparation procedure. A MS is prepared and analyzed for each different matrix, at a frequency of ten percent for AIHA-LAP, LLC samples and five percent for EPA or environmental samples. The MS must fall within acceptable limits in order to validate that the analyte(s) in a particular matrix have been fully recovered, and that no interferences are present.

A test for precision, termed duplicate analysis, is also performed for sample batches. Depending on the specific method, this may be a duplicate of a specific client sample, duplicate matrix spiked sample or duplicate laboratory control spiked samples. The duplicate sample must fall within an acceptable designated percentage difference with respect to the original sample in order to validate that sample preparation was precise.

It should be noted that although QA/QC criteria can be adjusted to meet specific client and/or state specific needs, the minimum controls will always be performed.

All QA/QC criteria are closely monitored, both manually and by computer, in order to insure the best possible analytical results. If any of the quality procedures for sample preparation noted above are not acceptable (i.e., Method Blank, Matrix Spike, Laboratory Control Spike, or Duplicate) and there is no apparent explanation as to cause, all data will be qualified appropriately and/or both sample preparation and analysis will be re-performed.

### **6.3 Sample Analysis QA/QC**

Before analysis begins, instruments are calibrated. Initial calibration for all laboratory instruments is performed with a blank and a series of calibration standards covering the optimum range of the particular instrument. After instrument calibration has been established and accepted, a broad range of quality control checks are performed to insure the optimum operation and accuracy of the instrument during analysis. The checks described below are performed on each instrument, regardless of whether it is used for organic or inorganic analysis, unless otherwise noted.

After calibration has been accepted, an Initial Calibration Verification (ICV) must be performed. The ICV is a source independent of the calibration standards and at a mid-range concentration within the calibration curve. If the result of this quality control check does not fall within the control criteria, calibration cannot be verified, and recalibration or new standards may be necessary.

Also, after the calibration has been accepted, an Initial Calibration Blank (ICB) must be run. The ICB is blank water or solvent used to create calibration standards. If the result of this blank does not fall below the instrument reporting limit, cause for contamination must be investigated and corrected before samples may be analyzed.

After the ICB has been accepted, an Interference Control Sample (ICS) is run for samples to be analyzed on the Inductively Coupled Plasma Atomic Emission Spectrometer (ICP\_AES). This quality control check is also based on a source independent of the calibration standards.

When all of these quality control checks have been performed and accepted, samples are analyzed, together with the sample preparation procedures performed during sample analysis. Calibration must be continually monitored to insure that no drift has occurred in the instrument. A Continuing Calibration Verification (CCV) is analyzed before and after each ten samples except for samples analyzed by mass spectrometry to insure that this does not occur. The CCV must fall within acceptable limits to be deemed acceptable.

In addition to monitoring of calibration, the analytical instrument must also be monitored to guard against sample carry-over or line contamination. These are monitored by running frequent Continuing Calibration Blank (CCB). The CCB must fall below the instrument reporting limit each time it is performed.

It should be noted that the acceptance criteria for instrument quality control checks will vary depending upon which analytical methodology and instrument are being used for analysis.

#### **6.4      *Quality Control Reports***

All percent recovery values and relevant percentage differences in values are plotted on Quality Control Charts automatically through our LIMS, these are continuously monitored for inconsistencies in order to assist in identifying any QA/QC problems at the earliest possible stage.

#### **6.5      *Proficiency Testing***

Con-Test Analytical Laboratory participates in a variety of programs in order to maintain its certification as well as to continuously monitor practices and procedures. The certification programs in which the laboratory participates include the New York State Department of Health Potable and Non-Potable Water Testing Program, the DMR QA Studies, AIHA LAP, LLC, Proficiency Analytical Testing Program IHPAT and ELPAT programs. In addition, the laboratory is periodically inspected by American Industrial Hygiene Association on-site inspectors, multiple state on-site inspectors and client auditors.

Additionally, in-house proficiency testing is performed to insure that proper practices and techniques are being employed for methods that traditional PT programs do not cover. More detailed information regarding the Con-Test Analytical Laboratory QA/QC program is available in the Con-Test Laboratory *Quality Control Manual*.

### **7.0      *SAMPLE RECEIPT AND TURNAROUND POLICY***

#### **7.1      *Turnaround Times***

Standard turnaround is five to ten (5-10) business days from time of receipt in the laboratory. Samples received after 3:00 p.m. are considered as received 9:00 a.m. the following business day.

The following rush turnaround times are available as needed with an additional charge. Please call the laboratory prior to the submission of rush samples for the availability of rush analysis.

- 4-day turnaround
- 3-day turnaround

- 2-day turnaround
- 1-day turnaround
- Same-day turnaround

Standard laboratory hours are Monday – Friday, 8:00 a.m. to 5:00 p.m. In addition, the laboratory runs limited second and third shifts, five days a week and Saturdays. Analyses requiring hours beyond the standard or weekend hours can be arranged. Please call the laboratory for further details.

## **7.2 Courier Service**

The laboratory has full-time courier service to facilitate sample return to the laboratory. Courier service is supplied free of charge within range. Courier service beyond this operational range is also available for an additional cost.

## **8.0 WASTE HANDLING PROCEDURES**

All samples received at Con-Test Laboratories are retained for 60 days after analysis date. Storage beyond this time period is available when written notice is rendered prior to the 60 day holding period. After this period, samples are transferred to a waste storage area and like samples are composited into a series of approved waste barrels. Those barrels are then removed and appropriately disposed of by a licensed waste handler.

## **9.0 SAFETY POLICY**

### **9.1 Chemical Hygiene Plan**

All employees are trained at their employment initiation and continuously throughout under the specifications of the Chemical Hygiene Plan. The Chemical Hygiene Plan is a written program developed to set forth procedures, equipment, personal protective equipment (PPE), and work practices that protect employees from health hazards associated with a laboratory workplace. It describes procedures for training employees about health hazards in the workplace and procedures for providing medical consultations and examinations when necessary. The plan is developed in accordance with the OSHA (Occupational Safety and Health Administration) Standard for Hazardous Chemicals in Laboratories (29 CFR 1910). This regulation is a guideline for handling hazardous chemicals safely in labs. It also outlines procedures to be followed in the event of an accident or emergency. The Chemical Hygiene Plan is reviewed annually and revised if necessary.

## **9.2     Safety Committee**

A Safety Committee has been established to address all aspects of safety within the work environment. Meetings are held on a regular basis. Safety issues are discussed, prioritized and then addressed. This committee allows important safety related issues to not go unaddressed, thus creating a safer, more efficient workplace.

## **10.0 PROFESSIONAL AFFILIATIONS**

Con-Test Analytical Laboratory and our professional staff hold memberships in the following professional and environmental organizations:

- The NELAC Institute
- Independent Testing Laboratory Association
- American Chemical Society
- American Society for Mass Spectrometry

## **11.0 REPRESENTATIVE CLIENTS**

### **Experience with Environmental Engineers/Municipalities/State Entities/Industry/Utilities**

Con-Test has appreciated a successful working relationship with environmental engineers and other entities for the previous twenty three years. Con-Test consistently meets and ultimately exceeds the service needs of our clients on quality, turnaround time, electronic and on-line data deliverables, detection limits, internal representation and client relations. The following are representation clients with whom Con-Test has forged long standing partnerships:

1. Northeast Utilities
2. NSTAR
3. AECOM
4. URS Corporation
5. ENVIRON
6. AMEC
7. ARCADIS
8. ATC Associates
9. Burns & McDonnell
10. Dvirka & Bartilucci
11. EA Engineering
12. Ecology & Environment
13. Fuss & O'Neill
14. GZA Geoenvironmental
15. HDR Engineering
16. HRP Associates
17. New England Gas Company
18. PSI
19. SAIC
20. Shaw Environmental
21. Tighe & Bond
22. Veolia Water
23. Weston Solutions
24. Woodard & Curran
25. Yankee Gas